

AS
end

the ink in the ink chamber 20 and the grooves 17 is removed by absorbing the ink in the ink chamber 20 and the grooves 17 through at least one of the communication passages 27 and 28 when the ink jet head is manufactured, maintained, or the like. It should be noted that in this description the word "unwanted substances" includes, for example, dust particles and bubbles.

IN THE CLAIMS:

Cancel claims 7 and 8 without prejudice or admission:

Kindly amend claims 1-6 as follows:

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cancel

1. (Amended) An ink jet head comprising: a substrate; a plurality of partition walls disposed on a main surface of the substrate and spaced apart at a preselected interval to form a plurality of channels each for receiving ink; an ink chamber plate connected to the substrate to define with the partition walls an ink chamber for supplying ink to the channels; and a passage forming member connected to the substrate and having an ink supply passage disposed in communication with the ink chamber for supplying ink contained in an ink storage device to the ink chamber and at least one ink discharge passage for discharging ink from the ink chamber.

2. (Amended) An ink jet head according to claim 1; wherein the ink discharge passage extends along a longitudinal direction of the ink chamber.

3. (Amended) An ink jet head according to claim 1; further comprising a check valve disposed in the ink discharge passage to permit the flow of ink from the ink chamber in only one direction.

4. (Amended) An ink jet head according to claim 1; further comprising sealing means for sealing the ink discharge passage to prevent the discharge of ink from the ink discharge passage.

5. (Amended) An ink jet head according to claim 1; further comprising a filter disposed between the ink supply passage and the ink chamber for filtering the ink supplied from the ink storage device to the ink chamber.

6. (Amended) An ink jet recording apparatus comprising: an ink jet head according to claim 1; and absorbing means for absorbing the ink in the ink chamber through the ink discharge passage.

Kindly add the following new claims 9-30:

9. An ink jet head according to claim 4; wherein the sealing means comprises a cap member and an O-ring.

10. A method for removing unwanted substances including dust particles and bubbles from ink in an ink jet head, comprising the steps of: providing an ink jet head comprised of an ink chamber having ink which contains unwanted substances, a plurality of channels disposed in communication with the ink chamber and having ink which contains unwanted substances, and a plurality of discharge passages for discharging ink which contains unwanted substances from the ink chamber and the channels; stirring the ink which contains unwanted substances in the ink chamber and the channels of the ink jet head to cause the unwanted substances to accumulate at one or more regions of the ink chamber and channels; and discharging the stirred ink accumulated at the one or more regions through at least one of the discharge passages to thereby remove the unwanted substances from the ink.

11. A method according to claim 10; wherein the discharge passages are disposed at opposite ends of the ink chamber.

12. A method according to claim 11; wherein the stirring step comprises stirring the ink which contains unwanted substances by absorption through the discharge passages.

13. A method according to claim 12; wherein the absorbing step comprises alternately absorbing the ink which

contains the unwanted substances through alternate ones of the discharge passages.

14. A method according to claim 10; wherein the discharging step comprises discharging the stirred ink through each of the discharge passages.

15. An ink jet head comprising: a substrate having an ink chamber for storing ink and a plurality of channels disposed in communication with the ink chamber for receiving ink from the ink chamber; and a passage forming member connected to the substrate and having an ink supply passage disposed in communication with the ink chamber for supplying ink contained in an ink storage device to the ink chamber and at least one ink discharge passage for discharging ink from the ink chamber.

16. An ink jet head according to claim 15; wherein the passage forming member has a main surface through which the ink supply passage and the ink discharge passage extend and a side surface having a plurality of openings each disposed in communication with a respective one of the ink supply passage and the ink discharge passage; and wherein the side surface of the passage forming member is connected to the substrate so that the openings are disposed in communication with the ink chamber.

17. An ink jet head according to claim 15; wherein the at least one ink discharge passage comprises two ink discharge passages.

18. An ink jet head according to claim 17; wherein the ink discharge passages are disposed at opposite end portions of the passage forming member corresponding to opposite end portions of the ink chamber.

19. An ink jet head according to claim 15; wherein the substrate has a plurality of partition walls spaced apart at a preselected interval to form the channels, each of the partition walls having a pair of deformable side walls; and further comprising a plurality of electrodes each connected to respective ones of the side walls of the partition walls and driven by a voltage signal to deform the side walls to vary the volume in the channels to thereby eject ink from the channels.

20. An ink jet recording head according to claim 19; further comprising a nozzle plate connected to the substrate and having a plurality of nozzle openings each disposed in communication with respective ones of the channels so that when the electrodes are driven by a voltage signal ink is ejected from the channels through the nozzle openings.

21. An ink jet head according to claim 15; further comprising a check valve disposed in the ink discharge passage to permit the flow of ink from the ink chamber in only one direction.

22. An ink jet head according to claim 15; further comprising sealing means for sealing the ink discharge passage to prevent the discharge of ink from the ink discharge passage.

23. An ink jet head according to claim 22; wherein the sealing means comprises a cap member and an O-ring.

24. An ink jet head according to claim 15; further comprising a filter disposed between the ink supply passage and the ink chamber for filtering the ink supplied from the ink storage device to the ink chamber.

25. An ink jet recording apparatus comprising: an ink jet head according to claim 15; and absorbing means for absorbing the ink in the ink chamber through the ink discharge passage.

26. A method for removing unwanted substances including dust particles and bubbles from ink in an ink jet head, comprising the steps of: providing an ink jet head comprised of an ink chamber and a plurality of channels disposed in communication with the ink chamber to define a flow path extending between the ink chamber and the channels

and having ink which contains unwanted substances, and a plurality of discharge passages disposed in communication with the flow path for discharging ink which contains unwanted substances from the flow path; causing the ink which contains unwanted substances to accumulate at one or more regions of the flow path; and discharging the ink accumulated at the one or more regions of the flow path through at least one of the discharge passages to thereby remove the unwanted substances from the ink.

27. A method according to claim 26; wherein the causing step comprises absorbing the ink which contains the unwanted substances through the discharge passages.

28. A method according to claim 27; wherein the absorbing step comprises alternately absorbing the ink which contains the unwanted substances through alternate ones of the discharge passages.

29. A method according to claim 26; wherein the discharging step comprises discharging the ink through each of the discharge passages.

30. A method according to claim 26; wherein the causing step comprises absorbing the ink which contains the unwanted substances through the at least one discharge passage.